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ABSTRACT

The guide provides suggestions for vocational educators who desire to write proposals for research, demonstration, or development. The guide's first chapter, Organizing Your Ideas, outlines procedures for communicating one's intentions and for preparing a prospectus or abstract, and offers models of abstracts. The second chapter, Writing the Proposal, covers the following areas: statement of the problem, review of the related research and literature, objectives, procedures or methodology, preparing a project time line, project evaluation, dissemination procedures, staffing, budget requirements, and appendixes. The final chapter, Submitting a Proposal, covers planning for the details and evaluating the proposal. The guide also includes an index. (JR)

WRITING A SUCCESSFUL RESEARCH GRANT PROPOSAL

by

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Introduction to the Guide

Many teachers could do a better job of instructing if they were able to obtain extra funds to implement their ideas in their own classrooms. Many educators have ideas for projects, but they need a set of guidelines to convert those ideas into a successful grant proposal. This manual provides a practical how-to-do-it guide to help vocational educators who desire to write proposals for research, demonstration, or development. These guidelines are addressed primarily to those of the Research Coordinating Unit of the Washington State Commission for Vocational Education of the state of Washington. The tips provided here can also be applied to other funding sources. Or, borrowing from a popular advertisement: "While you're up; get me a grant!"

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The guide is dedicated to Gordon McCloskey--master of the trade.

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CHAPTER 1

ORGANIZING YOUR IDEAS

If you desire to obtain outside grant support, then you might borrow from Michelangelo and the thought processes that ultimately helped him to create his "David." As ideas for the creation of his masterpiece began to gel, he envisioned a David slinging a projectile to slay the giant Goliath--capturing the excitement of the action. Michelangelo reflected on that idea and soon realized that action preceding thought violated rational logic. A "David Contemplating" action was chosen. A meditating David has been given to humankind because Michelangelo understood that purposeful action takes place only after the idea is formulated. But remember, David did most certainly take action--as do all slingers!

If you intend to obtain any grant from any funding agency, you must know precisely what is to be accomplished and then how it can be accomplished. Obtaining administrative support for the process of funding, therefore, starts with a teacher who has an idea, knows where to present the idea, and knows how to present it.

Communicating Your Intentions

Many creative ideas are generated by teachers to solve problems which confront them in the daily tasks associated with meaningful instruction. For the most part these same teachers do not know how to present innovative ideas in a form that will allow their administrators to appreciate the thoughts

and ultimately to aid in implementing them. So, if you have an idea about vocational or career education, what can you do? The following is a tested and general blueprint on how to infiltrate the educational establishment with your ideas.

All too often teachers complain that "the vocational director doesn't work on my ideas," "the principal really doesn't care," "the superintendent won't listen to my ideas," ad infinitum. The one thought that seems not to have been conceptualized by these same teachers is that the ideas were not adequately communicated. (Of course, it is assumed that the ideas were practical, perhaps even creative, but certainly educationally worthwhile.)

The most creative or the most worthy idea can be implemented only when the problem has been clearly identified. Once you have identified the problem or defined your objectives, then you should immediately write out the problem and the objectives that would lead to activities that could solve the problem or implement the idea. Without writing the objectives in clear, succinct statements, you may never have an opportunity to systematically evaluate the intended objectives. Next, reflect on what you have written and revise the objectives so that you have a well articulated and ordered set of ideas.

What is a problem? In vocationally related research or curriculum development, projects are funded which usually address some previously identified problem. In many cases, the problem is a question posed by a teacher. Or, it may be a series of observations from which a conclusion is derived. For example, a teacher notices that there is a declining enrollment in a class that has had a good record of successful job placements--that is a problem. Perhaps a teacher is frustrated by not having appropriate career-

vocational education learning materials--that is a problem. If students are not adequately learning some techniques that are prerequisite skills for future skills--then that is a problem.

Needs assessments. In some cases, "needs" assessments or surveys will be conducted to identify assets and deficits in vocational programs. The results of such surveys may lead to identification of heretofore unobserved problems. The conduct of a "needs assessment" means systematically collecting and reporting data from which reasonable persons would conclude that some condition is not what it ought to be. Often needs assessments emanate from intuitive speculations. If one were justifying an innovative vocational project and desired to obtain outside grant funds, a more objective rationale would need to be presented. The rationale is constructed from systematically identified or perceived needs.

Those conducting needs assessments usually use surveys to determine opinions. Such surveys are designed to objectively collect data from school patrons, the professional staff, students, community leaders and business persons. Other sources of data for needs assessments include longitudinal comparisons of test scores, attitudinal measures and performances in selected skills. Where appropriate, reviews of published or unpublished reports may also act as needs rationale. Through these means a series of generalizations are specified from which conclusions are drawn. The conclusions act as the "needs."

Individuals desirous of obtaining funded projects will find that the identified problem may be verified through a needs assessment. By using this procedure as a pre-proposal writing step the conduct of the project is justified.

Identifying the problem is just the beginning in preparing a grant proposal. Many problems are left unsolved because the next steps are not completed. The first is to specify what action is needed to eliminate the problem. The second is to determine how these actions can be conducted in some meaningful manner. Let us now examine these two steps.

What are objectives? The essence of any proposal is the objective or what is intended to be accomplished. An objective is an action to be attained. One works towards the successful fruition of an objective or set of objectives. Objectives are usually associated with ACTION--and interestingly enough, objectives are begun with action verbs. For example, the objective of this guide is "to prepare a manual for vocational teachers instructing how to write successful research project proposals." As you read through this manual, you will observe that all components and activities focus on that end. Objectives tell WHAT WILL BE DONE. This is critical since the intended actions must be clearly stated.

A few typical action verbs that act as leads to what will be accomplished are listed below. Normally, statements of objectives begin as:

"It is the objective of this proposal to . . ."

design . . .	validate . . .
identify . . .	synthesize . . .
prepare . . .	provide . . .
compare . . .	produce . . .
examine . . .	conduct . . .
classify . . .	assess . . .
assemble . . .	implement . . .
determine . . .	train . . .
evaluate . . .	select . . .
test . . .	illustrate . . .
apply . . .	develop . . .
demonstrate . . .	observe . . .

Most research proposals have only a few objectives. Remember, the chances of successfully accomplishing only a few objectives are far more probable than those of attaining a long list of objectives. This discussion will continue in greater detail in Chapter 2. At this point it is sufficient to note that the objectives form the crux of any project.

Preparing a Prospectus or Abstract

After the above steps have been completed, it is a great help to write a short prospectus or abstract concerning the totality of the idea. This summary should only be one or two pages in length and should provide the following information:

1. The problem or idea.
2. Objectives of the proposal.
3. A brief set of procedures by which the objectives could be implemented.
4. The type of evaluation that might be utilized.
5. A short discussion of the school district's needed commitment to implement the idea.
6. Estimated costs.

In some projects the evaluation component need not be specified explicitly since it would be implied in the specification of the objectives. Commitment to the project is more essential in exemplary or curriculum projects than in research projects. Estimated costs are useful for budget planning for the determination of needed matching funds or in-kind support.

Preparation of the prospectus should be done with care and completeness since in many cases it will also serve as the "letter of intent." This aspect is discussed in Chapter 2. Select your terms carefully so

that each word and sentence conveys a most precise concept to the reader. Use plain language and avoid the use of catch words, cliches, or slogans. (Three examples are provided later in this chapter to illustrate clear intent.) The terms abstract and prospectus are often used interchangeably. Normally the abstract of a proposal which has not yet been accomplished is written in the simple future tense. This indicates what will take place after it has been funded.

After final completion of the prospectus, discuss it or present it via a personal visit to your principal, vocational director, or immediate administrative supervisor. This approach should be accomplished on a formal basis. In other words, you will want to: (1) arrange for an appointment, so that you may discuss your idea with appropriate administrative personnel; (2) send a copy of your prospectus to the person with whom you are meeting in advance, thus allowing that person a few days to study the prospectus and note some reactions; and, (3) conduct a formal discussion through a personal conference to obtain the viewpoints of the administrator.

Listen carefully to all reactions and criticisms so that you may benefit from administrative experience and "power." The initial discussion about your proposed idea usually leads to another revised prospectus and follow-up session. During the follow-up session the work will be re-evaluated, probably rewritten with a revised proposal being submitted to the school's decision-making body. The above technique means that you will be submitting the prospectus within your own organization and through existing administrative channels.

If administrative lines are not identified in a published organization chart for the school district, then use your own common sense and

work with the person who might be able to implement the desired program or changes. You need support from your principal and support from your superintendent or a program coordinator. It follows that you must include their decision-making powers in the plan for action.

Finally, after the organizational hurdles have been cleared, your idea can be transformed into a written and detailed proposal which will then be forwarded to an appropriate agency for evaluation and, ultimately, fiscal support. Nothing pleases school board members more than to have ideas emerge from their own organization that ultimately mean the betterment of the educational experiences of the children under their direct supervision.

Administrative considerations. Those who hold administrative positions should be aware that the blueprint described here allows for an honest and open avenue of communications. By developing the creative or futuristic planning talents of the vocational faculty and staff, the school district itself becomes a source from which ideas are generated. As ideas, program changes, or innovations are formally transmitted through administrative channels, establishment of program priorities and clearly defined decision-making responsibilities become mandatory. The priorities affecting program development would stem from a systematic "needs survey" that would be conducted in the school district. Observe how these steps are prerequisite to a more humanistic approach to program development. The real pay-off is that students will be getting a better education.

Models of a Prospectus and Abstract

The preceding discussion focused on the preparation of a working guide from which a more detailed proposal may be prepared. We subscribe to the position that the well organized and articulated idea will be

easily expanded to the successful grant proposal. To aid you in achieving the latter task, you need to examine various styles of abstracts. Three such statements follow.

As these three models are being analyzed, note how each differs from the other and that each very clearly communicates what is to be accomplished and how. Carefully observe how the selected words convey precise meanings. Note also the simple, logical, and well-planned development and organization of each model. Finally, you will note the complete absence of cliches or meaningless shibboleths.

The third model shows how to prepare an abstract which focuses on curriculum implementation projects. In the near future it appears that federal agencies such as the Department of Health, Education, and Welfare will begin to follow the paradigm so successfully used by the Education Directorate of the National Science Foundation. Vocational and career educators should examine model 3 to observe one method used for curriculum implementation at the state level. However, these educators should adapt or modify the concepts for their respective school districts or area vocational schools.

By the way, all of these were funded in competition at either the regional or national level.

Abstract--Model 1

Title of Project: The Effectiveness and Efficiency of Two Types of Simulation as a Function of Level of Elementary Education Training*

Principal Investigator: Gerald R. Girod

Estimated cost: $9,300

The problem: Teacher preparation institutions are finding it increasingly more difficult to provide their trainees with adequate pre-service and in-service classroom management training due to the shortage of effective laboratory settings and materials. Consequently, filmed simulations are being used to overcome this deficiency. The reported research assessing the effects of assigning two different types of simulations to the various levels of educational training is sketchy.

The objective of this study will be to examine eleven hypotheses concerned with the relative effectiveness and efficiency of two types of simulations used with four undergraduate training levels (freshmen, sophomores, juniors, and seniors).

The following procedures will be utilized in the study: Eight subjects randomly chosen for each of the eight subgroups from undergraduate volunteers will be trained using: (1) classroom management films developed by Teaching Research of The Oregon System of Higher Education or (2) verbal descriptions of the filmed episode to identify and alleviate simulated schoolroom problems during the spring semester of 1969. They will then be posttested using films and film descriptions. Measures will be taken on response type, discrimination of cues for training, testing, and attitude. A two-dimension factorial design analysis of variance will be used to compute the interactions for six training measures, two change scores and the attitude scale. The two test measures will be analyzed via an analysis of variance.

The expected contributions to education: The data derived from this study should aid planners of teacher training programs in deciding which simulations should be implemented and what benefits they may expect to accrue when simulation materials are used at various training levels.

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*From Gerald R. Girod, The Effectiveness and Efficiency of Two Types of Simulation as Functions of Level of Elementary Education Training, U.S. Department of Health, Education, and Welfare; Office of Education, Bureau of Research, Final Report, Project No. 9-I-055, Washington State University, Pullman, Washington: September 1969.

Abstract--Model 2

Title: The Impact of College and Universities on Educational and Occupational Aspirations of Women*

Investigator: Michelle Patterson

Estimated cost: $9,976

Objectives: The study will compare the differential effects of attending college or university upon the educational and occupational aspirations of men and women. Two theories of level of aspirations will be tested--theories of "relative deprivation" and "environmental press."

Such institutional characteristics of colleges as sexual composition of the student body, whether a school is male, female, or coed, and the selectivity of admissions criteria will be the primary independent variables. Family background characteristics, ability levels, attitudes toward marriage, and family will be controlled to isolate the effects of college. The study will examine changes in undergraduate educational and occupational aspirations from freshman to senior year.

Procedures and methodology: The analysis will use existing longitudinal data developed by the American Council on Education. Approximately 60,000 1966 freshmen were followed up at the end of their first year, junior, and senior years.

Significance for career education: The study should yield significant findings about the impact of the college experience upon men and women as well as the operation of various social reference groups. Understanding these effects should be of value to educational planners as well as counselors.

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*From Program Plan for Fiscal Year 1975, Department of Health, Education, and Welfare; National Institute of Education, The NIE, Washington, D.C.: September 1974, p. 16.

Abstract--Model 3

Title. A State-Wide System to Promote the Implementation of New Programs in Science, Mathematics and Social Studies

Project director. Donald C. Orlich

Estimated cost. $25,000 each year

The problem. There is a need to provide a prototype system for a state-wide mechanism to diffuse curricular innovations in elementary and middle school science, mathematics and social sciences. This need would be reduced by coordinating the plans, activities and structures of four already existing agencies: The National Science Foundation, Washington State University, The Washington Office of the State Superintendent of Public Instruction and the 12 Washington Intermediate School Districts (ISD's) which encompass the state's 305 operating school districts.

Objectives. The specific objectives of this project are to:

1. Provide intensive preparation during the summer of 1974 to curriculum specialists selected by the Washington Intermediate School Districts to create resource personnel for "Science--A Process Approach" (SAPA), "Science Curriculum Improvement Study" (SCIS), and "Elementary School Science" (ESS). Six other programs will be selected for 1975 and 1976.

2. Provide each resource person with sets of diffusion strategies and paradigms for presenting in-service orientation programs on the selected curricula in the respective intermediate school districts.

3. Establish and evaluate a model for a state-wide dissemination and diffusion network.

Procedures. A series of three intensive summer workshops will be conducted on campus at WSU. Participants to these resource personnel workshops will be curriculum specialists designated by the ISD's. The resource persons will be prepared to understand the rationale, structure and materials of each program and will return to the respective ISD's to conduct a series of awareness-information workshops on the programs. An evaluation of the system will be concurrently conducted through use of data collecting instruments to determine the number of awareness workshops conducted and the number of adoptions of "new" programs.

Significance of project. This sytem could be a prototype model for other states. The plan is conceptually similar to the change-agent model which has been so effective in the nation's agricultural sector.

CHAPTER 2

WRITING THE PROPOSAL

The writing and evaluating of the project prospectus is the first step toward the preparation of the final project proposal. It must be noted that in nearly all major grant competitions, funding agencies usually require a "letter of intent." The letter of intent for all practical purposes is the prospectus that was discussed in Chapter 1.

The competition for federal or any outside funding is keen. In most funding periods there will be at least twice as many proposals submitted as there is money to grant them. In some cases the number is as high as ten to one: for every ten proposals submitted, only one is funded. It takes much effort to prepare a complete proposal. Agency personnel know that, so the trend is toward opening a grant competition by requesting "letters of intent." Through this technique, only a page or two of actual copy needs to be written. But, it is imperative that these pages be carefully and systematically written. The "letter of intent" is evaluated by a panel of judges, with only the better abstracts being accepted for the second phase of the competition.

Now comes the work. Once the letter of intent or abstract has passed the initial evaluation, you will be invited to submit the fully developed proposal.

REMEMBER: When writing a detailed proposal, always follow exactly the guidelines which the agency or foundation publishes. If you do not have a copy of the guide for the preparation of proposals from a specific agency, write--or better yet, telephone them for a copy.

Concerning the topic of guidelines, it is imperative that they be followed exactly. All sections of the guidelines must be addressed. Proposals are rejected because the writers omit sections. A proposal must comply with the format established by the funding agency regardless of how creative or meritorious the idea may be. When evaluators judge proposals, they follow a set of evaluative criteria which are based on the guidelines.

In addition to preparing the proposal there is always a deadline which must be met for the submission of the proposal. Your proposal must arrive or be postmarked on the prescribed date or it will not even be accepted by the agency.

Most proposals require the following elements:

1. Abstract of the project.
2. Statement of the problem and justification.
3. Review of relevant literature.
4. Objectives to be accomplished.
5. Procedures or methodology to achieve the objective.
6. Evaluation techniques.
7. Recommended dissemination procedures.
8. Staffing needs.
9. Budget requirement.
10. Appendix materials--as needed or required.

These elements will now be examined in greater detail. The abstract has been adequately discussed, so we begin with the statement of the problem.

Statement of the Problem

Observed situations, results of a needs survey, or evidence that an identified group needs what you propose constitutes a "Statement of the Problem." Depending on the study's magnitude and announced funding criteria, local problems may be sufficient to address. In federally funded competitions it is essential to illustrate that the problem exists regionally, state-wide, or nationally. The more nationally significant the problem, the higher the probability of funding.

The problem statement must explain why the proposed project should be funded. Remember, you are attempting to convince a panel of judges that your problem is more worthy of support than that of someone else. This is what competitive funding is all about--all applicants are in direct competition with each other. The researcher who takes the effort to review some situation as it has existed and then speculates about future conditions made possible by that project will have that proposal judged higher on the problem section than one who does not adequately develop the significance of the problem.

The justification of the proposal is presented to warrant the granting of funds. Do not become alarmed if you think that the stated problem is too narrow. On the contrary, the mark of a well designed research study is that the problem has a manageable focus. If a problem is stated very broadly the reviewers will conclude that the project cannot be

successfully conducted because of the broad magnitude. For example, a vocational educator wants to examine attitudes of high school girls about entry into selected non-traditional women occupations, e.g., welding or auto mechanics. It would be helpful to show that the problem is national in scope by providing appropriate data. But, the study would probably take place on a school district or regional basis. The researcher limits the scope of the problem by showing that one aspect of the problem will be examined--not the entire problem. Reviewers of such a proposal would be sympathetic to the writer, especially if the writer shows how the survey results could be used by those in the state or, in this example, the nation to help alleviate sex-role job stereotyping.

The statement of the problem should be written in clear, concise terms. It is in this section that a reviewer will be convinced of the worthiness of the project. Write this section from a clearly developed outline--even if the statement is only one paragraph long.

Curriculum development proposals pose a different situation. Many curriculum projects investigate promising programs or practices designed to promulgate desirable educational or instructional change. In such cases, the writer should stress that the intended curriculum, program, or activities are usable in other similar schools. The latter is called "transportability" or "generalizability" in the judging evaluative criteria.

Curriculum development proposals must be carefully formulated to show that something of significance will emerge. Courses of study or unit guidelines are not significant, per se. Curriculum development proposals must illustrate that they are comprehensive and address a definite need. Further, the writer must coordinate the creation of the curriculum and its

validation. These two aspects are discussed in greater detail in this chapter under "curriculum development projects." Curriculum development and validation are components of the problem. By addressing them in the problem statement, reviewers will gain an appreciation for the project. If a reviewer develops a positive attitude toward the project in the needs section, then the proposal has a better than average chance of gaining a good evaluation. If the reviewer is immediately antagonized by the problem statement, it takes a very strongly written proposal to reduce those negative impressions.

In summary, state your problem with precision so that it communicates a justification for the funding of your project. A few such statements follow.

1. There is greater demand for vocational education training than can be met with current faculty and facilities.
2. Female students are prevented from acquiring training in high-paying fields.
3. The needs of the local employment market are not sufficiently met by occupational training programs.
4. The range of occupations offered by vocational education programs in the school is too narrow.
5. Students are not adequately prepared in basic English and mathematics to be offered good jobs on graduation from high school.
6. Too many students are trained in fields where there are few jobs, and the system is too slow in updating course content and adding courses in new fields.
7. Cooperative efforts between educators and the business, industry, and labor communities need to be increased.
8. There is a need for more and better counseling and the development of effective placement programs.
9. The image of vocational education needs further improvement.

10. There is a lack of adequate programs to provide vocational training for handicapped students.

11. The vocational education system is not training enough minority group students and women, which businesses need in order to comply with the Equal Employment Opportunity Act.

The above problem statements are all national in scope. To support each, if used in a grant proposal, the researcher must also add a justification for each so that alledged problems would be validated. Such validation could be done through needs assessment techniques. By using deductive logic these generalizations could be focused on local needs from which plans of action to alleviate those problems could be prepared. The one characteristic that American education has . . . is problems.

Review of Related Research and Literature

Any well-developed proposal must contain a review of relevant studies, research or curriculum materials. The review is not merely a listing of a few indiscriminate publications, but a closely related orientation to the general problem. Even Nobel Prize winners examine the studies of others. Major studies should be cited and briefly summarized. Critical analyses should be noted for all empirical studies being used in the review. The review provides one means by which the researcher may establish evidence to support hypotheses being tested or to provide justification for the study or the methodology being used to accomplish the objectives. In some cases the review of literature and the statement of the problem may be closely related. In such cases, the two sections may be combined.

The review should be rather contemporary. Include out-of-date sources only if they are landmark studies or germane to the topic. Be

especially careful in citing opinions or authorities. Opinions are not construed as research. Further, opinions can be selected to support any position. Do cite, however, tested studies or reports of experiments or similarly conducted projects.

One way to initiate the review is to conduct an "ERIC" search. The national dissemination network of Educational Resources Information Center (ERIC) is sponsored under the auspices of the United States Department of Health, Education, and Welfare. Computer aided searches may be accomplished very quickly. In the state of Washington, the Research Coordinating Unit associated with the state's vocational education program will conduct an ERIC search on request. Such a search will save the researcher valuable hours and in some cases is a mandatory requirement.

The researcher must examine and evaluate all such bibliographic items. All cited works should be noted in a bibliography or list of references. Be accurate in preparing the lists. If a quotation is used, be certain to quote it exactly as it is written and to provide an appropriate citation.

In some proposals, a writer may attempt to follow an established theoretical position. The hypotheses and assumptions associated with the theory should be explicitly identified with the implications for the researcher's proposed study being fully specified. The review should fit logically into the research proposal. It is a coherent part of it and should show professional writing competency. Shoddiness or poor writing style will cause a reviewer to doubt the researcher's ability to conduct a project.

Usually the review of research is written in simple past tense. The logic for such writing is that the works have already been completed.

The researcher is providing a synthesis of studies completed. However, if a researcher prefers to write the review in the present tense, this is permissible. It is appropriate to use the present tense when presenting generalizations and conclusions.

There is no area that has not been studied and reported by somebody! If no citations can be found which refer to some topic, then the wrong bibliographic descriptors have surely been used. Persons "ahead of their times" may encounter a lack of reported studies. For example, the thrust for "Career Education" by Sidney P. Marland, Jr., can be focused on 1972. Prior to that time the concept of "career education" did not receive the emphasis which it received between 1973 and 1975. Yet, articles have been published about careers and the concept of educating for careers since the early 1900's. If a researcher states that "nothing" has been published about "my topic," proposal evaluators will become wary or suspect and may tend to rate the proposal adversely.

Assuming a review section, the researcher should judiciously select those studies to be included. One effective method is to prepare all bibliographic entries on 5-inch by 8-inch cards. As the review is completed the cards may be organized to form a basic writing outline. There is no need to quote verbatim all persons whose works are selected. Most works should be paraphrased. Use a quote only when the rephrasing of a statement will lose the connotation of the original. Of prime importance, relate the literature to the problem or the proposed study. This gives continuity to the proposal and helps the reviewer to understand better the intent of the project.

A word of caution must be interjected here. Your proposal is strictly a "one-way" exercise in communication. You must write very

clearly, define all esoteric terms and synthesize previous studies accurately. All writing must be explicit! A reviewer will simply not "second guess" implied statements. Select words to convey the exact and intended connotation and denotation. Evaluators will not contact you to clarify some aspect in either the review of literature or any other section of the proposal. It is the researcher's responsibility to communicate to a panel of unknown judges. The local English teacher may be required to help critique or review the proposal before it is submitted. This would be a wise measure since the proposal will be judged for quality. The writing style and syntax reflects the quality of the proposal. Since you are taking time and effort to prepare a proposal, the final product should be the best possible work of which you are capable.

Examine the short section from a much more expanded review of literature which emphasizes the importance of student feelings and cognitive success. First we present the problem and purpose of the study. Observe how the writer quickly establishes a logical pattern and continues to develop it in line with the problem. Note how the lead-ins are varied, i.e., the method by which each writer's study, research or conclusion is stated within the section. Finally, observe that the writer states all points explicitly. A writing style which allows for implied meanings has absolutely no place in scientific writing. With just a little practice the technique illustrated here can be easily adapted by others.

One Example of Writing the Review of Research

The problem. A teacher's ability to empathize with students (affective sensitivity) has been found to be positively correlated with teacher competency. The affective states of students and teachers

influences learning. The teacher needs to assess accurately student feelings while a behavior takes place so that the learning processes may be facilitated. One major problem of teacher education and inservice programs is to help teachers become sensitive to the perceptual and emotional forces operating in the classroom environment.

The purpose. The basic purpose of this study is to develop and validate a simulation device that will measure a teacher's ability to identify verbal and nonverbal emotions expressed by a student (teacher affective sensitivity).

Note: for illustration only the basic purpose is presented here. Kravas then stated eleven specific objectives and four research hypotheses.

The review. In 1957 Soper and Combs wrote that research about student feelings and perceptions was urgently needed in education (Soper & Combs, 1957, p. 315). Fifteen years later, exploration into the emotional forces in learning is still a neglected area of investigation. By accepting the premise that a primary objective of education is student learning, then emphasis must be given to the dimension of feelings. Thoughts are enriched by feelings, just as feelings are enriched by thoughts. When affect is truncated from cognition, learning itself is impaired.

Feelings and attitudes are learned early in life and each student enters the classroom with a large repertoire of emotions ranging from happiness and joy to fear and sorrow. As psychologist Clark Moustakas observed, affective states influence the student's ability to learn (Moustakas, 1966, p. 37). One of the findings of the Coleman report,

Equality of Educational Opportunity, was that a student's feelings about himself or herself and others were highly correlated with academic achievement (Coleman, 1966). Prescott demonstrated that "mild" frustrations and fears have a constructive impact on student learning in that they encourage an individual to exert special effort or to attempt previously avoided risks to achieve a goal. But recurrent and forceful emotions can have the reverse effect (Prescott, 1958, pp. 47-49).

Many academic deficiencies have been traced to emotional and attitudinal problems. For example, students who participate in special reading clinics do not usually have physical eye impairments. Rather, they have developed negative feelings about themselves as people who are not capable of reading (Combs, 1965, pp. 14-15). While studying the thought processes of students, Bloom found that, although individuals most prone to anxiety performed as well as their classmates on a comprehensive achievement examination in demonstrating the learning of specific knowledge, they did significantly poorer on problems involving analysis, application and synthesis (Bloom, 1954, pp. 40-41). The anxious students were unable to concentrate on the content being considered by the rest of the class because they spent relatively more time thinking about their own problems.

. . . . . .

Despite the evidence that knowledge must be related to an affective state if it is likely to influence learner behavior, affective learning and expression continue to hold a subordinate position in the classroom. Encouraged by such proclamations as Jerome Bruner's classic

assumption that " . . . any subject can be taught effectively in some intellectually honest form to any child at any stage of development (Bruner, 1960, p. 33)," teachers have continued to place emphasis on the teaching and learning of cognitive structure . . . .*

The references which are cited would be either placed at the end of the review section, or placed at the end of the proposal in a separate section entitled "References." A complete bibliographic citation for each source would be included. Note the model which would accompany the above review.

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*From: Constance H. Kravas, "The Development and Validation of a Simulation Device to Measure Teacher Affective Sensitivity," Pullman: Washington State University, Final Report, National Institute of Education, Project No. 3-0468, 1974, pp. 2 and 3. Reprinted with permission of the author.

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Objectives

As has been stated previously, the essence of a research proposal is a set of well specified objectives. Each objective should be stated in a simple sentence and should be a statement of WHAT WILL BE ACCOMPLISHED. If a set of objectives is proposed, then arrange them in priority, i.e., the most important, followed by those of lesser importance. We initially discussed objectives in the section concerning the abstract and we shall try not to duplicate those ideas here.

Why objectives? Objectives are needed to convey the notion of action. It will be the objectives which reviewers will examine in detail.

Objectives should be written to specify the limitations or the parameters of the study. For example, if you were to study "the relative learning efficacy between audio-tutorial and live instruction for arc welding," it would be within a specified setting. The objective might read:

> "The objective of this project is to compare the learning rate of arc welding by two groups of 20 students, one using audio-tutorial, the other live instruction at Benjamin Franklin High School."

The above objective is very specific. You are comparing learning rates (which would be defined in a definition of terms or in the procedures section), of a small sample (20 students) using two different instructional methods, and at one high school. The subject is arc welding.

Often investigators state objectives that imply universality. In the one just cited, the incorrect and non-limited version might be: "The objective is to determine whether students learn more welding via live

or audio-tutorial instruction." The latter addresses a universal, not a specific, and thus, would be rated poorly by a judging panel.

Common mistakes. Some of the more common mistakes that are found in the objectives section follow.

1. The writer states the problem rather than the objective. This shows confusion between the condition and the intended solution.

2. Procedures are specified instead of objectives. If you were to determine attitudes, then, "to conduct a survey among students. . ." would be inappropriate. That is a procedure.

3. The objectives are too "fuzzy," or contain imprecise terms. More than one investigator has proposed ". . . that the learning environment of the high school become more humanistic." This is obviously a worthy ideal, but as it is written it is not a research objective since it is too all-encompassing.

4. The writer never states an objective. Some writers simply "talk around" a statement but never state it in explicit terms. We suggest that an objective statement always be led-in by: "The objectives of this proposal are: . . . ," or "The research objectives are: . . . ." By using such a lead-in the writer is forced to focus on WHAT WILL BE DONE!

Testing Hypotheses

In some research proposals the investigator may test the efficacy of one or perhaps several competing hypotheses. In these types of proposals the investigator should make clear distinctions between the research hypothesis and the null hypothesis.

The research hypothesis. A research hypothesis is a statement which may concern cause and effect relationships. Often it is written using the logic of the "if-then" syllagism. Scientific fields have literally thousands of research hypotheses. In the social-behavioral sciences, where vocational education might be classified, the research hypothesis may not be as well specified. In most cases few teachers actually can state a research hypothesis that may have been inferred from empirical studies.

A few such research hypotheses which are appropriate to the readers might be:

1. "Career bound" superintendents leave their positions more frequently than "place bound" superintendents.
2. The elementary school principal affects the diffusion of innovations by virtue of position.
3. Positive reinforcement will lead to the desired behavior.
4. The cream rises to the top then spoils.

These are from the works of Richard O. Carlson, B.F. Skinner, Donald C. Orlich, and Laurence J. Peter (the inventor of the "Peter Principle"), respectively.

These hypotheses all share the common principle of predicting relationships between selected variables. Hypotheses are only as good as their ability to predict the probability of future actions or consequences to occur.

Null hypothesis. To determine if a hypothesis is testable in statistical terms it will usually be stated in the null form. The null hypothesis is a statement which asserts that differences between groups will be due to chance, not the experimental statement. In the previous example of teaching arc welding via (1) audio-tutorial or (2) live instruction, the null form might be written as:

> "There will be no significant differences on a practical examination between students who learn arc welding via audio-tutorial and those who learn via live instruction."

This form of the null hypothesis means that no significant differences will be observed between posttest results of the two groups. If the data show no significant differences, then we "tentatively reject the

research hypothesis." That is, there were not any statistical differences. If, however, one treatment group shows a statistical difference over the other group, then we "reject the null hypothesis." By rejecting the null hypothesis the research hypothesis is accepted.

Null hypotheses are usually stated in the objectives section of the proposal. One sequence of topics could be:

1. Purpose of study.
2. Statement of objectives.
3. Research hypotheses.
4. Null hypotheses.
5. Level of statistical significance.

The researcher selects the level of statistical significance at which the null hypotheses will be rejected. If one were willing to accept results that could be due to chance alone five times out of one hundred, then the .05 level of statistical significance would be specified by the researcher. The level of statistical significance is established before the study is conducted, not after.

The reader should refer to any of the standard textbooks on statistical methods or research methods to seek elaboration on hypotheses testing. Our intent is to present an introduction to the topic as it pertains to proposal writing so that you may realize some of the details which affect the way you prepare a research proposal.

Whether or not the rejection of the null hypothesis is educationally relevant is, of course, another question. The field of educational research has some evidence to show the triviality of many proposed research

or null hypotheses. Unfortunately, most education researchers do not adequately control their experiments to allow a major generalization.

The single criterion on which a research hypothesis rests is "can the hypothesis be empirically tested?" In scientific research, the experiment may well be the best technique by which to settle educational arguments. Of course these experiments must meet the rigors of accepted methodology.

The first step, however, to any research or development proposal is to specify the objectives--the intended action phase of the project.

Procedures or Methodology

There is a truism among agency review personnel--"We don't fund objectives; we fund procedures." The needs and objectives are all implemented through the procedures. This is the section in which you articulate HOW THE PROJECT WILL BE CONDUCTED. Explicit details must be presented to convince the funding agency that the objectives can be accomplished.

There are several different types of methodologies which can accomplish a set of objectives. Each of the types listed below will be expanded briefly. In general there are:

1. Surveys
2. Curriculum development projects.
3. Staff development projects.
4. Case studies.
5. Experimental designs.

Non-experimental Designs

Surveys. A frequently used methodology in the field of education is the survey. Surveys are used to collect data about some specific trait or to obtain opinions concerning a set of concepts, ideas or programs. The survey is basically comprised of: (1) a set of objectives; (2) instruments, i.e., questionnaires or personal interview schedules; and (3) a sample of respondents. The most important part of the survey is preparation of the data collecting instrument. (Note: The Research Coordinating Unit of the Washington State Commission for Vocational Education has a book entitled Guide to Sensible Surveys. Persons who desire to conduct surveys should obtain this book prior to conducting any survey since it discusses how to prepare questionnaires in great detail.)

The survey sample may be selected by polling the entire population, e.g., every vocational home economics teachers in a state, or by choosing a non-biased sample on a random basis. In some cases, a stratified random sample is chosen. The latter technique is used to insure representation from various subgroups of the population. Whatever sampling plan is used, it should be written in detail identifying who will be sampled, how the sample was established and why the techniques are being used.

Curriculum development projects. A very commonly funded "research" activity stems about the production of needed vocational courses, units or modules. Curriculum development goes beyond the mere formulation of a course of study. A curriculum study design is normally composed of a statement of objectives, description of methodology, scope and sequence of learning experiences, description of content, and delineation of procedures for evaluating the effectiveness of the curriculum.

Objectives should be stated concisely in terms of student learnings and, perhaps, behaviors, and translated into criteria against which the curriculum is to be evaluated. Recent advances in subject matter and learning theory should be reviewed as needed. The proposal should stress investigative or experimental activities rather than program implementation. The project should be innovative for the investigator undertaking it and should hold promise for contributing to curriculum improvement in other settings, i.e., be transportable or generalizable.

Curriculum activites generally fall within the areas of development or validation, or a combination of the two. A small project might be designed to create or to validate selected curriculum materials or methods as part of a larger curriculum effort. In unusual cases, a study could meet the requirements of a total curriculum effort in a specifically limited curriculum area.

When the research is primarily development of curriculum, the proposal should:

1. Describe the theoretical background, related research, and bases by which new types of student experiences will relate to the objectives of instruction.
2. Designate which curriculum design areas are involved and reflect knowledge of previous work in the area.
3. Illustrate the process or procedure to be used, giving attention to how the present curriculum will be improved.

Curriculum development usually leads to the production of a "product" on completion of the project. The product may be a simulation, book, learning module, audio-tutorial device or set of methods for instruction. The procedures for curriculum development projects should specify the form of the final product.

When the research is primarily validation of curriculum products or processes, the proposal should:

1. Delineate the area of curriculum design under investigation.
2. Identify the relevant variables designated for study and the procedures for determining the effects of these variables.
3. Describe the population involved, the data to be gathered, and the instruments to be used.

The rationale for curriculum validation projects is to determine the appropriateness of curricula in different environments. Usually one desires to know if a curriculum will achieve its intended ends with groups of students who were not involved in the initial development of the curriculum. As career education curricula become an accepted part of the curriculum, several validation studies should be conducted to determine the efficacy of the curriculum materials prior to large scale adoptions. Such research will reduce the chances of the classic blunder of the Physical Science Study Committee (PSSC) which developed a rigorous high school physics curriculum in the early 1960's. PSSC was designed for the very best high school students. But guess who was convinced to use it? Right, all high school physics teachers. One didn't need the Enrico Fermi Prize to predict the almost total collapse of high school physics enrollments because of this type of product dissemination and lack of curriculum validation by a group who should have been more empirically oriented. If materials do not teach well or the students incur great learning difficulties, the materials simply are not working. (Of course, this assumes teacher behaviors appropriate to the curriculum and prerequisite learning skills by the students.) Curriculum validation projects are very essential to the success of the total school program--and to the success of the students.

Staff development projects. Staff development or in-service education is very much a part of vocational education research and development. This aspect might be one area that is underdeveloped. Regardless of what has been written about performance objectives and a myriad of other educational techniques, in the last analysis, innovations are implemented by the staff! An aware and sensitive staff is the basis for change.

The preparation of a staff development project is almost identical to that of a curriculum project, except the emphasis is placed on the preparation of a selected staff with a set of competencies, instructional methods, curriculum techniques or program skills.

Case studies. Case studies have long been used by social workers, counselors, teachers, administrators and many others. The case study is an attempt to provide an objective description of what takes place (behaviors, conditions, attitudes) with usually no attempt to manipulate variables. (Medical case studies are, of course, an exception.) To manipulate variables means that the independent variable is systematically applied to the subjects in question.

Case studies are helpful for fact finding and for describing changes which may take place in individuals, organizations or instructional techniques. When using case study methodology, the investigator must be cautious that personal bias or systematic observational bias is not inadvertently built into the design. The case study is a detailed examination of one subject, instruction, or community considered as a unit. The drawing of inferences or conclusions from a case study requires a great deal of knowledge about the larger group from which the unit is drawn.

Yet, case studies are most helpful in identifying possible leads which might isolate critical independent or dependent variables. The latter could then be tested through experimental studies.

Experimental Designs

The previous methodologies typically lack the use of control and experimental groups wherein the experimental group receives the manipulated o independent variable. As one approaches "true" experimental research, there is need for careful control and application of the independent variable. To be certain that some outcome or trait is caused by the experimental treatment there is need for more than one group of subjects or students. This section will not attempt to describe all experimental designs since there are many books on that topic. What we will present are a few basic tenets of experimental design that can be used effectively by any vocational educator who desires to control or manipulate one independent variable or set of variables.

Typically variables are classified as independent and dependent. The independent variable is some characteristic, behavior, procedure, or curriculum that ought to be associated with some effect or dependent variable. The classic experiment with Pavlov's dog might be called to mind. Remember, Pavlov rang a bell each time the dog was fed. Ultimately Pavlov could ring the bell (independent variable) and the dog would salivate (dependent variable) without being fed.

In all experimental designs it is usually assumed that if some independent variable occurs, it will be associated with another characteristic or observable event--the dependent variable. It must be cautioned that specified conditions are needed to produce such a relationship.

A few years ago a study was conducted in which the researcher concluded there was a somewhat high probability of a student's owning a car in high school and receiving relatively poor grades. The independent variable was owning a car while receiving relatively poor grades was the dependent variable. Now, to test this hypothesis (where did we see that term before?) one ought to predict success in high school as measured by grades and automobile ownership. The only problem is that the correlation is so low that the predictions are no better than chance alone.

Why the discrepancy? There are too many other independent variables associated with auto ownership and grades in high school. Further, it must be cautioned that correlations rarely determine cause and effect.

As you plan for research experiments, the following factors must be considered:

1. Instrumentation (tests or measurement devices).
2. Subjects.
3. Selection of control and experimental groups.
4. Independent variable (the treatment).
5. Posttesting.
6. Analysis of results.

Instrumentation. The development of instruments that will measure changes in behaviors must be accomplished early in any research design. If measures are not available, e.g., to measure the efficacy of teaching arc welding via audio-tutorial or by live instruction, then the investigator must design them. In such cases parallel forms are usually needed for pre- and posttests, as are determinations of instrument reliability and validity. Pretesting is essential to establish a base-line by which to compare later

results. In other words, you want to know where all subjects are prior to administering any independent variable. If you find that some subjects already know what you will be teaching, then they must be screened out of the experiment since their scores will contaminate both pre- and posttest results.

If the subjects are truly randomly assigned to experimental and control groups, a pretest is not always necessary because any differences between groups on the posttest will reflect changes produced by the introduction of the independent variable, i.e., the experimental treatment.

Instruments may be adapted from those already published. However, if you do adapt an instrument that has a copyright, be sure to seek written permission from the publisher before you alter the instrument. If not, you may be the subject of litigation.

Where specific performance objectives are used, the criterion measure components of the performance objectives may be converted into the instruments and collectively form the standards by which achievement will be determined.

Regardless of the approach to be used, reliable and valid tests should be used. The researcher ought to know for whom the tests were designed and how accurately they predict traits for the intended group.

Subjects. The subjects used in an experiment should all be rather homogeneous for selected traits. You need to be sure that all subjects exhibit approximately the same trait prior to applying the independent variable with the experimental group. However, if the sample of subjects is randomly selected and randomly assigned to the control and experimental groups, the variability of traits will probably not affect the outcome. By

using randomization the researcher will avoid inadvertantly introduced bias. The results from random group experiments are usually more generalizable than are those where extensive statistical manipulations must be performed to equalize the groups.

The selection of subjects must be done without building in a bias which will favor your treatment group. For example, it would be very unfair to match fifteen-year-old boys against fifteen-year-old girls on some skill which required physical strength. But, one might match them on some manual dexterity program.

One last caution about the use of human subjects in experimental studies is needed. According to federal regulations adopted by the U.S. Department of Health, Education, and Welfare, no human subject may be exposed to experimentation which could cause physical or psychological harm. Researchers who desire to study rather sensitive issues such as sex, religion, family interactions, or personal habits may find their proposals flatly rejected.

Control and experimental groups. Once the sample of subjects has been defined, they ought to be randomly assigned to the treatment groups: the control group has no independent variable administered while the experimental group receives the independent variable.

Students, or as they are called in design, "the subjects," should be randomly selected for groups. Random means exactly that. The most random method of selection is to place the names of all subjects in a "hat," thoroughly mix them, and draw one name alternately for the control and experimental group.

If this is not possible, then entire classes should be drawn from the "hat" to determine which classes will act as experimental and which will act as controls. Teachers would also be assigned to those classes in the same random manner. Such a selection assures the elimination of bias.

Independent variable. The independent variable would be administered to the experimental group. This would be the group, for example, to receive instruction in arc welding via audio-tutorial, or whatever.

The control group receives the same instruction with the exception of the independent variable treatment.

This is difficult to achieve in the same school since students frequently interact. Thus, there is a chance that your experimental group may exhibit the "Hawthorne Effect." This means that since they know that they are subjects for an experiment, they ought to act differently than they normally would in the same situation. This effect can be controlled by using randomly selected groups from different schools, or by giving the control group something different to do also. In this manner all groups will think that they are doing something unique. The best method to counteract the Hawthorne Effect is not to tell any of the subjects that they are in some "new" program, or that they are in some experiment. Make it "business as usual" for all groups.

It is essential that the researcher carefully control the independent variable treatment. This will lessen the chances for contamination to occur in either group.

Posttesting. In some designs there is only one pretest and one posttest. This is very unfortunate since project success is contingent on only one student performance--the posttest. We would like to suggest that

a series of "performance checks" be made through the duration of the experiment via formative evaluations which are specifically designed to monitor the project. This means a systematic assessment or test at each phase of the experiment should be made. From the series of formative measures, data may be derived which can be compared to the base-line for all groups and for different time intervals.

The posttest or summative test is the final testing of all groups. The posttest should be accomplished at the same time for all groups to avoid any contamination of data.

Analysis of results. An analysis of the data, test results, or comparisons between or among groups is essential. In most cases parametric statistical tests will be used. These tests must be planned in advance so that the collected data will meet the assumption of each specific statistical analysis. Many school districts have evaluation specialists who have access to computers. Identify these individuals before the project is funded so that data analysis may be conducted through electronic data processing equipment which use already programmed statistical analysis packages, or "canned programs" as they are called in the trade.

When designing the project the above elements should be addressed. If your research yields interesting results, there will probably be a replication or duplication at other sites to determine the efficacy of the independent variable.

The above may sound overpowering to the novice who has a "good idea." But remember, ideas are not funded--the procedures are! Collectively, the procedures and objectives must support each other. This does

not mean that your creativity is being curbed. It simply means that your creative efforts must be logically and systematically developed so that the ideas can be accomplished.

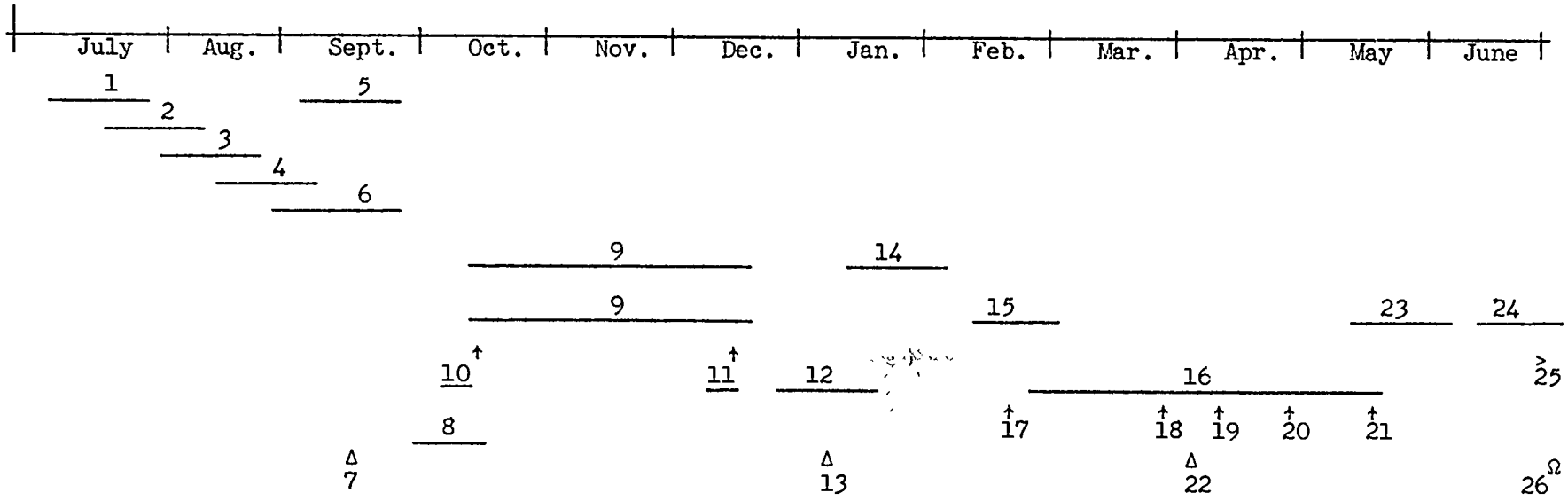
Preparing a Project Time Line

A complementary aspect to the procedures is the preparation of a project time line. The time line may take many forms including sample work plans, task-identification plans, flow charts or PERT charts (Program Evaluation and Review Technique). A sample project time line, Figure 1, follows this section as one model.

Most guidelines require that the proposal include a portrayal of anticipated project activities. The plan can be used for several purposes: (1) to aid in the overall administration of the project, (2) to identify critical tasks, (3) to sequence major activities, and (4) to determine the project's progress by external evaluators.

Time lines or flow charts graphically illustrate activities to all project staff. Figure 1 illustrates a rather simple project time line. More detailed charts may be constructed to show expenditure plans; personnel requirements; needed equipment, material or supplies; or any other major administrative component. The chart is really prepared to aid the project director to manage and coordinate necessary activities.

Now, on to evaluation, or how to show the reviewers that you'll do what you intended to do.



1. Begin project/Review of Literature
2. Selection of Curriculum Materials
3. Selection of Tests
4. Selection of Control and Experimental Groups
5. Final Draft of Review of Literature
6. Teacher Orientation
7. Submit First Quarterly Report
8. Prepare and Distribute all Materials for Pilot Test
9. Pilot Test Phase: two groups
10. Pretest Groups
11. Posttest Groups
12. Evaluate Pilot Test Phase Efforts
13. Submit Second Quarterly Report
14. Revise protocols
15. Teacher Orientation
16. Conduct Full Scale Experiments
17. Pretests
18., 19., 20., Formative Evaluations
21. Posttests
22. Third Quarterly Report
23. Analysis of Data
24. Write Final Report
25. Submit 2 copies of Report AIM/ARM
26. Project ends--Submit Final Report

Figure 1. Sample Project Time Line

Project Evaluation

All projects must be evaluated to determine if the stated objectives were met. Evaluation should be as simple as possible and should focus on the accomplishment of the project objectives only. In smaller projects, those up to $10,000, it may be adequate for the project director to be the evaluator. This can be a difficult task since the director may not be objective in perceiving the project's progress. Larger projects need an outside or third party evaluator. Each of these types is now discussed.

Internal Evaluation

The ultimate outcome of the project will be the fruition of the stated project objectives. An internal evaluation should address how effectively the objectives were accomplished, problems which developed that were unanticipated, and what products were developed (if product development was an objective). In short, internal evaluation is selecting what will be judged and then judging these items by using predetermined criteria. In all cases the project objectives form the central focus of the evaluation plan.

If evaluative instruments (questionnaires, rating scales, checklists or observation guides) are required as a part of the internal evaluation, then the data collected from these instruments should be included as a summary in the evaluation report.

In many smaller projects formative evaluation will be adequate, i.e., using evaluation as a "feedback" mechanism. Formative designs require a constant monitoring of project activities. The project director

then attempts to make adjustments where needed so that the project may progress at an efficacious rate.

If the project objective is written as an extended performance objective, the evaluation component will automatically be incorporated. For example, if a project objective were to: "Provide 100 students in the interior design class with materials to each construct a model illustrating design principles for low cost vacation houses . . .," then the evaluator would specify what materials were utilized and how many models were prepared. If other evaluative criteria were specified, they would be used as a basis for judging the project. Regardless of the type of project, the evaluation plan should be specified in the research proposal.

External Evaluation

Some research contracts funded under vocational education grants require an external or "third party" evaluator. The third party evaluator is usually a person who has knowledge of the field, probably someone who holds a responsible vocational position in another school district. Or, this person may be a specialist in evaluation or curriculum.

The job of the outside evaluator is to judge how well the project is progressing. The evaluator should be available to advise and effect desired or needed changes throughout the duration of the project. On some projects, the outside evaluator will be required to provide some technical assistance regarding evaluation techniques or the modification of the evaluation techniques which were specified in the original grant proposal.

Third party evaluation costs about five percent of the budget. Typically it costs a minimum of $300 to $500 to conduct an external project evaluation. With rather large projects the cost would increase proportionally.

Discretionary awards (small grants limited to $2,000) require only an evaluation plan or the naming of the individual (perhaps the project director) who would check to be sure that the objectives were completed. With larger grants (over $10,000) it is better to avoid any misunderstandings by developing a contract for the retaining of the third party evaluator. The contract should be a simple statement of what is expected of both parties--the project director and the third party evaluator. A model of such a contract follows. The model may be modified to accomodate any specific research or developmental project.

Model for a Third Party Evaluation Contract

A third party evaluation is being planned for this project with a subcontract to be awarded by the prime contractor. A subcontract will be written and submitted to the project officer for modification and/or approval. After project officer approval, a third party evaluator will be retained by the project director. The following main elements will be written into the third party evaluation subcontract in greater detail as specifications to direct the third party evaluation activities.

1. Statement of the purpose of the third party evaluation.
2. Statement indicating general services and products to be provided.
3. Names and resumes of personnel.
4. Specification of documents and facilities to be provided by the contractor.
5. Scheduling specifications (approximate dates).
6. Evaluation plan (sampling techniques and procedures).
7. Specification of reports.

8. Special assurances (confidentiality, records, products).

9. Evaluation budget and payment schedule.

The third party evaluator will be provided with the following:

1. Federal regulations relating to the project.

2. Complete project proposal as approved.

3. Pertinent correspondence concerning the project.

Interim report. An interim report will include:

1. A critique of the overall evaluation of the project.

2. Review of all products and processes being developed in the project assessing validity, reliability and usefulness.

3. Review of project methods and techniques for evaluation data processing including methods appropriate to the constituencies.

4. Examination of all time line commitments for program development, data gathering and reporting.

5. Recommendations for modification of evaluation procedure if needed.

Final evaluation report. The final evaluation report will include:

1. Examination and verification of the conduct of the project according to the major objectives of the project.

2. Review of methods of assembling, analyzing, and reporting these data including the application of appropriate statistical techniques, data processing and reporting. Careful attention will be given to the precision and limitations of the data gathered.

3. A critique of the reporting process will be accomplished, including the methods of feedback to the advisory groups.

4. Report of time line commitments for all phases of program responsibilities.

5. Copy of contract between the project and any other technical assistance source affecting project work.

6. Copies of all products developed.

All other reports and documents developed during the project period will also be made available.

Evaluation plan. Specific sampling techniques will be utilized to complete the third party evaluation. These techniques and related activities are described below.

The subcontractors will examine and evaluate all products and items developed. Analyses of the materials and processes will be made in consideration of the specified component objectives.

Pre-evaluation. The central objective of the pre-evaluation is to examine the proposed evaluation system developed by the project evaluator and to determine whether it provides a basis for an adequate evaluation of the project. This includes:

1. Review of project procedures to determine if they are appropriate toward meeting the objectives of the program.
2. Examination of the evaluation procedures, types of instruments and arrangements for assembling evaluation data.
3. Examination of the system of reporting and interpreting the evaluation data at various phases of the program to appropriate constituencies.
4. Examination of plans for total project development.

In addition to the foregoing, the pre-evaluation report will include some suggested techniques of evaluation that may be considered when designing individual components within the project.

Assurance of confidentiality. Any need by the subcontractors to have access to specific documents or persons will be made known to the project director. Such requests are expected to be reasonable. The third party evaluators must hold all information and findings as confidential. Only the project director may release or authorize public release of such information.

Designing an Evaluation Component

The reader might be apprehensive about project evaluation after reading the model for a third party contract. This is not our intent. We desire to illustrate with a very detailed model so that aspects could be selected to accomodate any evaluation plan. The project writer determines the evaluation. Really, the evaluation may be as simple as "We did exactly what we said we would, and here is the supporting evidence."

Dissemination Procedures

The proposal should state how the results of the project will be made known to a wider audience. All project directors are required to submit a final report. In most cases this report will be the actual project description. Not surprisingly it contains: (1) the needs for the study, (2) the objectives, (3) the procedures, (4) the results and (5) conclusions and recommendations. The final report ought to be duplicated by "multilith" or "mimeograph." "Xerox" copies are permissable. Under no circumstances should spirit master ("Ditto") copies be submitted. The final report should be easily reduplicated for any possible wide-spread distribution or reprinting.

Further, the report should be summarized and submitted for publication in the appropriate professional journal. The project director should also send summaries to interested personnel in the state. One method is to present a paper at one of the state association meetings. If the topic is of wide-spread interest, the Research Coordinating Unit will reproduce the study and disseminate it widely.

Finally, two copies should be sent to the appropriate national clearinghouse. Persons completing studies in the general areas of vocational or technical education should submit two copies of the final report for possible inclusion in Abstracts of Instructional Materials (AIM) or Abstracts of Research Materials (ARM). These abstracting services will then disseminate information about your project nationally. As of July, 1975, the address for the clearinghouse is:

AIM/ARM
Center for Vocational Education
1960 Kenny Road
Columbus, Ohio 43210

Who pays for the project dissemination? Surprise! It is built into the budget.

Staffing

One section of the proposal will require a listing of the personnel who will work with the project. In all cases there is the project director. The director is responsible for the total administration of the project, including the writing and submitting of the final report. If the project has other personnel, each position should be described with a listing of major responsibilities of those persons. If consultants are needed, they should be identified. You should provide a short description of the professional or technical competencies of all personnel. In that manner reviewers will be able to judge the relative professional merits of the project staff. You should obtain at least verbal permission before including any one on this list. With large projects, a detailed vita should be included for all principal personnel.

Budget Requirements

The energy to conduct your project emanates from the awarded grant. It is most essential that the investigator make a reasonable estimate of fiscal needs. Present enough detail to show why the money is requested to conduct the proposed activities. Each of the categories of the budget are listed below. In smaller grants these categories may simply be "zero." In longer grants there may be a necessity to add a page explaining project fiscal needs in even greater detail.

Personnel. All personnel who will be paid from the grant as well as those who will contribute in time-sharing should be listed. This includes the project director, other assistants, technicians, consultants, and secretaries. State the percent of time on the project, the annual salary of the person (or the salary range if the exact salary is not known), and the amount to be paid each individual for the duration of the project. Include all positions which are essential to conduct the work. Never ask for more than is needed, but never seek less than is appropriate. Be explicit. It is allowable for the project director to be paid a salary from the grant. Of course, the salary must equal the contracted salary for the same duration, i.e., you cannot receive more for conducting research than you would have ordinarily earned. In some cases, the salary will be for summer work. This amount should be pro-rated at the appropriate amount.

Employee benefits. All benefits that are a part of salary should be computed in this section. Include: Social Security payments, retirement contributions, health and accident insurance premiums, workmen's compensation, vacation pay (if authorized) and any other benefit that is normally provided

by the school district or institution. The percent rates or actual costs should be noted in the budget.

Travel. Travel is carefully scrutinized. Be certain to justify all travel. Further, subdivide travel by local vicinity and out-of-town categories. Estimate the mileage to be traveled in conduct of the project. State the exact rate at which mileage will be paid. If out-of-town travel is required, specify the exact number of days and list the per diem rate that is allowable. If air travel is needed, obtain a quotation for round-trip fare. Taxi fare and other travel associated expenses are all permissible.

Supplies and materials. The project director should predict what amount of expendable office supplies and project materials, including postage, will be required. The amount requested in this category is contingent on the type and magnitude of the project.

Communication. In some projects long distance telephoning will be essential. Estimate these costs. Further, if some newsletter is being distributed by the project, that cost should be computed.

Services. Included in the services category are those costs which may require rather substantial costs. You may budget for: (1) duplicating and reproducing; (2) statistical costs, e.g., test scoring and computer costs; (3) testing (specify types and costs); (4) final report costs; (5) other services, e.g., dissemination costs or cost to build prototype pieces of equipment or models if essential to the project's fruition.

Equipment. In general, capital equipment may not be purchased with research or project grants. Certain types of equipment may be available from federal sources and surplus equipment divisions. If equipment is required, cost of rent or lease vs. purchase should be

considered. Where the project is to develop prototype materials the justification for purchase of equipment must be carefully elaborated.

Other direct costs. Included in this category would be the cost for consultants (if not addressed under personnel), costs for services to be subcontracted to outside agencies or firms, evaluation costs, and any other services that are essential to conduct the project.

Indirect costs. Indirect costs or "overhead" are those costs incurred as a part of the expense of the general operation of a school district or institution. These costs are charged against a grant on a specified pro rata basis. The rate is established by a federal agency, usually the Department of Health, Education, and Welfare (DHEW). An institution must apply to obtain an indirect cost rate. In most cases it is a specified percent of either the salaries and wages or a lesser percent of the total direct costs category. If further information is required, obtain Federal Government Circular FMC73-8 which shows the methods for determining reimbursable costs, i.e., overhead, and where to apply for consideration.

Cost sharing. The federal government and many other agencies require some measure of formal cost sharing on research grants. The most common method of cost sharing is in the form of services contributed to the project by regular staff members or administrators who are paid from school or non-federal funds. In vocational research projects a minimum of 10% cost sharing is required. The cost sharing can take place in any category of the budget, but the cost sharing must be documented.

Appendices

In some cases there need to be appended items that support the project proposal, but whose inclusion in the proposal body would break the continuity of the proposal or clutter it. Appropriate appendix items would be: (1) letters of endorsement, (2) previously tested modules, (3) complex statistical formulae, (4) computer flow charts, (5) flow charts, management guidelines or Program Education and Review Techniques (PERT) charts--if not placed in the procedures section, (6) samples of questionnaires or interview schedules, (7) samples of intended product development and (8) clearances to administer tests--if necessary.

A great deal of information has been provided in this chapter which is aimed at the person who would like to prepare a successful proposal. Each year the granting agencies modify the funding guidelines, but the basic components described in this chapter tend to be those which are common to all proposals.

If the researcher is seeking only a mini-grant, many of the components mentioned might not be applicable.

Now, on to Chapter 3 which provides a few pointers on submitting the final product.

CHAPTER 3

SUBMITTING A PROPOSAL

Planning for The Details

The previous chapters attempted to provide all that you need to know--and maybe more--about constructing a grant proposal. The tips already presented are based on long-time study and grant writing by the authors. Yet, once the proposal is completed there are a few details which need consideration.

The Manuscript

The proposal ought to be neatly typed. Whether it is single or double spaced depends on the guidelines. If it is not specified then double space the manuscript since that makes it easier to read.

Use a variety of subheadings. Observe how this book makes use of subheadings. Subheadings help in the organizing of topics and also help reviewers to follow the logic and development of the document.

Duplicate the proposal via the best reproduction method available. Copies are desirable if they are dark printed with clear backgrounds. Remember, a sloppy manuscript is hard to read and could possibly cause the proposal to be rejected. Check each copy of the proposal to be certain that all pages are in order.

Authorization

Prior to submitting the proposal, be absolutely certain that you have the person's signature who is authorized to sign for the school! In some cases you must plan at least one month ahead of the deadline date since school boards only act on those items included on the agenda. If a summer submission is expected, be sure to check on the date of board meetings, since they often meet only once a month in the summer months. In some cases the board may simply authorize someone in the district to authenticate proposals.

Deadlines

Your proposal must either arrive on the established due date or be post-marked by a specified date or it will automatically be rejected! Secretarial help, duplicating, signatures and final submission must be planned well in advance of the deadline date. This requires coordinating the efforts of several people so that your proposal moves on an established schedule.

If you are a novice at grant writing, it might be helpful to prepare a task-time line chart. All tasks would be identified on such a chart. In this manner all activities could be articulated, culminating with the final proposal being submitted on time. The next section describes how you can evaluate your own proposal before the final copy is submitted.

Evaluating Your Proposal

The panel of evaluators who will review your proposal represent a cross section of agencies concerned with vocational education and will be authorities in the field. Therefore, they will be able to judge if you are

current in your methods and thinking. They will evaluate the soundness of your plan, the likelihood of its securing productive results, whether your resources to conduct the proposed program or project are adequate, and the relationship of your project to other similar programs already completed or in progress.

In addition to including the above mentioned general criteria, you should write for the current yearly application forms of the Research Coordinating Unit. They will include additional recommended criteria which reflect the priorities for that year. As an example, general criteria recommended for research projects in fiscal year 1975 were that:

1. All projects must have greater than local implication, they must be exportable.
2. All projects must have evaluation components.
3. Only projects concerned with the ninth grade level and above will be considered.

In addition, a specific set of priority areas for 1975 were published.

A word of caution, however; what is a priority area one year may not be funded the next.

Why Proposals Are Rejected

Some of the reasons given for rejecting proposals include the following characteristics.

1. The problem is beyond the scope of the author, or the problem is more complex than the writer stated.
2. The problem is too trivial.
3. There is little likelihood of securing productive results.
4. There is not sufficient guarantee of commitment from local school districts applying for grant. (Ten percent minimum is required by federal law.)

5. Adequate facilities are not available to accomplish the work.

6. The proposed methods or procedures are unsuited to the stated objectives.

7. The selected staff does not have adequate experience or training to direct the project.

8. The requirements for funds, equipment and personnel are unrealistic.

9. The proposal reflected a biased tone which was simply "slapped together."

10. The deadline for submitting the proposal was not met.

11. Guidelines were not followed exactly.

Self-evaluation Before Submission

The writers have reviewed dozens of evaluation forms and have noted a number of common criteria. The following form combines these criteria into an evaluative format that will serve as a self-checklist for your proposal.

We close with a grant-swinger's slogan: You won't get the money unless you ask for it!

SELF-EVALUATION FORMAT FOR EDUCATIONAL PROPOSALS

Rating Scale 1. Unsatisifactory or Not Specified
3. Needs Improvement
5. Excellent

		Ratings
1.	Needs for project are clearly stated and documented.	1 3 5
2.	Objectives are clearly stated.	1 3 5
3.	Objectives are related to identified needs.	1 3 5
4.	Procedures to conduct project are described fully.	1 3 5
5.	Subjects of the study are described.	1 3 5
6.	Instruments or data-gathering methods are described.	1 3 5
7.	Appropriate methods are selected to analyze data.	1 3 5
8.	Evaluation design is specified.	1 3 5
9.	Budget is adequate or realistic to conduct project.	1 3 5
10.	Project report is clearly written.	1 3 5
11.	Project is socially and/or educationally significant.	1 3 5
12.	Qualified personnel are available to conduct project.	1 3 5
13.	Facilities are adequate for project.	1 3 5
14.	Matching funds are available for project.	1 3 5

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